

# Technical Support – Rotating Machines

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## *Slip Rings - Troubles and their Causes*

### **BURNING OF FLEXIBLES**

The primary cause is persistent unequal load distribution between brushes, because of:

1. Unequal pressure on the brushes.
2. Brushes sticking in boxes.
3. Mixing different grades on one ring. Loose termination screws, dirty or blurred terminals.
4. Corrosion of flexibles by gas.
5. Flexibles too short or too stiff, tending to hold brush off the ring.

### **FLATS**

Burnt or worn patches which can result from:

1. Starting against a heavy load, especially if the brush pressure is light.
2. Unequal current sharing between brushes.
3. Rotor out of balance.
4. Synchronised vibration from an external source.
5. Tarnishing or rusting of the exposed portion of the ring whilst the machine is idle, particularly if it is out of service for a considerable time. This particular trouble can be avoided by lifting the brushes and covering the rings, or wiping them with light oil as the machines comes to rest.
6. A series of burnt patches, each patch corresponding to the brush outline and therefore referred to as ghost marking is often associated with sparking – see below.

### **GROOVING OR SERRATION**

1. Long periods of light load running
2. Unsuitable brush grade
3. Incorrect or unequal brush pressure
4. Dust from the atmosphere or from brush bedding
5. Brushes badly bedded

## **SPARKING**

Although this can result from overloading or from unsuitable grade of brush, sparking on slip rings is usually mechanical in origin from such causes as:

1. Poor alignment of brush holders
2. Low or unequal brush pressure
3. Imperfect bedding of the brushes
4. Brushes sticking in their boxes, because of insufficient clearance or dust
5. Dust from atmosphere getting underneath the brushes
6. Flexibles too short or too stiff
7. Rings out of true
8. Rotor out of balance
9. Vibration from external source (This often gives rise to ghost marking)